

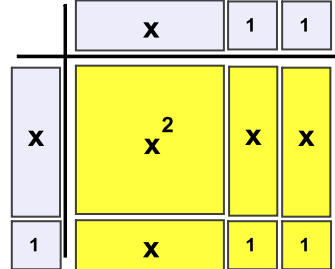
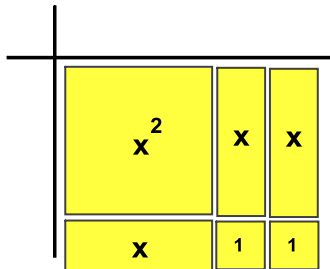
Factoring Trinomials That Look Like $x^2 + bx + c$

3 terms

For a trinomial in the form $x^2 + bx + c$:

- the factors are in the form $(x + m)(x + n)$, where $m \times n = c$ and $m + n = b$.

Given $x^2 + 3x + 2$, express the trinomial with algebra tiles and factor.



$(x+2)(x+1)$

$x^2 + 3x + 2$
 $\swarrow \quad \searrow$
 $1 + 2 = 3$ $1 \times 2 = 2$

$x^2 + 3x + 2 = (x+1)(x+2)$

Steps to Factor a Trinomial in the Form $x^2 + bx + c$

- Write two sets of brackets and place an "x" in each bracket.
- Determine what **two** numbers that **multiply** to give you the **last** number and **add** to give you the **middle** number.
- Place the **adding** result in the brackets with the appropriate sign.

Example 1

Factor the following trinomials.

a. $x^2 + 2x - 35$

$\frac{5}{7} \times \frac{7}{-5} = 35$
 $\frac{5}{7} + \frac{7}{-5} = 2$

$= (x-5)(x+7)$

b. $x^2 - 2x - 8$

$\frac{2}{2} \times \frac{4}{-4} = -8$
 $\frac{2}{2} + \frac{4}{-4} = -2$

$= (x+2)(x-4)$

c. $x^2 - 11x + 24$

$\frac{3}{-3} \times \frac{8}{-8} = 24$
 $\frac{3}{-3} + \frac{8}{-8} = -11$

$\frac{1}{4} \times \frac{24}{4} = 6$
 $\frac{1}{4} + \frac{24}{4} = 6.25$

d. $x^2 - 20x + 100$

$\frac{10}{10} \times \frac{10}{-10} = -100$
 $\frac{10}{10} + \frac{10}{-10} = -20$

$= (x-10)^2$

Remember, FACTORING is the OPPOSITE of EXPANDING

expanding \rightarrow
 $(x+2)(x-7) = x^2 - 5x - 14$
 factoring \leftarrow